

These elements are altogether different from those published by Professor Mädler in his *Untersuchungen über die Fixtern-Systeme*, which assign an orbit deviating but slightly from a circle.

λ Ophiuchi.

“The elements subjoined are perfectly satisfactory. They were calculated from all the observations known to me at the close of the year 1848. The angle given by Sir W. Herschel in 1802 is altered 180°, as the only way of reconciling the whole series of positions with any supposable orbit.

Perihelion Passage 1791.214

Position at Perihelion	177° 50'
Ascending Node	30° 23'
Inclination.....	49° 40'
Angle between π and Ω on orbit ...	135° 24'
Excentricity	0.4772
Semi-axis major	0".847
Period	95.88 years.

In this orbit the least apparent distance = 0".31 at an angle of about 125° and the greatest apparent distance = 1".11 at an angle of 10°. The comparison with observations shews that the errors are small considering the great difficulty attending measures of this star.”

Remarks on Irradiation. By Capt. Shortrede.

With reference to the subject of irradiation brought before the Society at last meeting, Capt. Shortrede states the following facts which he observed in Western India :—

“The island of Karanja, in Bombay Harbour, was one of my stations, the summit being about 1000 feet above the sea. The top of the pillar under the dome of the Observatory at Bombay is about 70 feet above the sea, and distant from Karanja about eight miles. To observe the centre of the pillar, I had the slit of the dome turned towards Karanja, and a heliostat being outside, the sun’s light was thrown upon a screen having a circular hole, five-eighths of an inch in diameter, carefully adjusted over the centre of the pillar. Viewed from Karanja, the appearance of this was a beautiful planetary disc, perfectly round, the edges being *nicely* in contact with the sides of the slit on the dome. This appearance continued unvaried for several days, and there was no sensible difference by varying the aperture of the telescope from two inches to half an inch. The slit in the dome is fifteen inches wide, and the sun’s light passing through a hole of five-eighths of an inch, seemed of exactly the same size. The object *appeared* equally bright throughout, and the edges were sharp and well defined.

“The telescope was one of Dollond’s master-pieces; it had a triple object-glass of two inches clear aperture, and bore well powers of 40 and upwards; but for terrestrial objects I preferred a power of 25.

“Another fact of the same kind, but not admitting of such definite measurement, was that at Mandwi station. I had a referring mark on Bhatras, distant about seven miles, both being peaks at a mean height of about 4000 feet above the sea, and about 2000 feet above the intervening ground. The sun’s light was transmitted through a hole three-tenths of an inch in diameter, and in strong daylight (with the telescope as well as with the naked eye) it had much the same appearance as *Sirius* by night. It had not the round planetary disc observed in the other case. The wires in the focus of the telescope subtended rather more than 3”, and at their intersection they subtended between 3”·5 and 4”; but I found that I could not get them entirely to hide the referring mark.*

“In each of these cases the apparent enlargement of the object may possibly have been chiefly owing to the light reflected from the particles of air very near the path of the ray. They are quite distinct from the enormous enlargements to be seen when the rays pass near the surface of the earth through an atmosphere of varying density, for in such cases the objects are always unsteady and flaring.

“I may mention also in reference to the visibility of small opaque objects on a bright ground, that on one occasion, from a station twenty-five miles or more to the eastward, I observed the Pangaon station at sunset, when the station-pole, being *projected on the sun’s disc*, was a remarkably good object. For several days I had found it invisible otherwise. The pole was about twenty inches thick and about fifteen feet high. It did not occur to me that the breadth was sensibly diminished.”

On the Manufacture of Optical Glass in England.

By Mr. Simms.

“The difficulty that has hitherto attended the construction of achromatic telescopes of large apertures in this country has arisen, as is well known, from the faulty state of our flint-glass manufacture, and notwithstanding the efforts that have from time to time been made with the view to its improvement, it has till lately continued so defective in all the qualities requisite for forming a good telescope, that I recollect to have succeeded in only two instances in my attempts to make with it unexceptionable object-glasses of only three and a-half inches aperture.

“Our supplies of flint-glass have, therefore, been drawn from the Continent, and although discs of great purity have been obtained

* 0·3 inch subtends 1” at the distance of a mile, nearly.